

REMARKS

Applicants wish to thank the Examiner for his time in conducting the interview with applicants and the undersigned on October 26, 2010 and his attention to the issues relating to this application.

Disposition of Claims

Upon entry of the foregoing amendments, claims 1-2, 4, 10, 17-19, and 21-25 will remain pending in the application and stand ready for further action on the merits. Claim 1 has been amended to clarify that the motorized rotating object holder, which receives the object from the rotary indexer, is rotated on a spindle coupled to a motor. Furthermore, claim 1 has been amended to clarify that the object remains rotationally fixed, that is, it does not slip as it is being transferred from station-to-station. The remaining claims are ultimately dependent upon amended claim 1 - dependent claims 10, 17, 18, 19, 21, 23, and 24 have been amended to make them consistent with amended claim 1. Claims 14-16, 27, and 30-35 have been canceled herein without prejudice or disclaimer of the subject matter contained herein. These claim amendments are supported throughout the specification, particularly at page 8, lines 11-30; Fig. 2a; and by the originally filed claims. No new matter has been added to the application.

Claim Rejections under 35 U.S.C. §103

The Office Action rejects claims 1-2, 4, 10, 14-18, 21-22, 24-25, 27, and 30-35 under 35 U.S.C. §103(a) as being unpatentable over Gordon et al., U.S. Patent 5,632,205 ("Gordon") in view of Carlson, U.S. Patent 7,283,657 ("Carlson") and Osterfeld, U.S. Patent Application Publication 2002/0092731 ("Osterfeld"). In response, applicants respectfully submit the combination of Gordon, Carlson, and Osterfeld does not render the presently claimed invention, as recited in the amended claims, prima facie obvious for the reasons discussed below. First, applicants agree with the Examiner that Gordon discloses a method of orienting a spherical object, such as a golf ball, using a camera to image the object and a camera for processing the image and for computing a spatial rotation. The object is brought into desired spatial orientation using conical wheels to support the ball and rotate it around an axis. As the Examiner recognizes, the Gordon method uses a single station to perform the entire orientation of the ball. There is no transfer mechanism disclosed in Gordon. The ball is not transferred from orienting

station-to-orienting station. However, the Examiner takes the position that it would have been obvious to use the transfer system described in Carlson in the method of Gordon and thus asserts that applicants' invention is prima facie obvious. In response, applicants respectfully submit that even if a person of ordinary skill in the art looked to Carlson and combined its teachings with the teachings in Gordon, the present invention would not be obvious.

Applicants agree with the Examiner that Carlson discloses a system for automatically orienting a spherical object, particularly a golf ball, which involves certain processing steps at four separate work stations. Referring to Figs. 7-10 in Carlson, the method involves picking up the golf ball from the starting cup (60) at the first station (ST0) with grippers (76). The gripper arm grips the ball and pivots through a fixed 90 degree arc, thus placing the ball in the bottom cup (62) of the first work station (ST1). The upper cup (66) is activated to hold the golf ball in the bottom cup (62). The gripper arm then releases the ball and rotates back to a position midway between the work stations (ST0 and ST1). The ball is released at the first work station (ST1) by retracting the upper cup (66). Then, the ball is conveyed from the first work station (ST1) to the second work station (ST2) by means of a second transporting mechanism (78) that operates similarly to the first mechanism (76). (col. 13, lines 53-67 and col. 14, lines 41-51.)

It is respectfully submitted, however, that there is no disclosure or suggestion in Carlson for the presently claimed inventions as pointed out below.

1. First, Carlson does not disclose or suggest a rotary indexer as presently claimed by applicants. Rather, Carlson discloses using a beam with pivot points, wherein the transporting mechanisms are mounted in a linear arrangement. The transporting mechanisms are arranged in parallel to each other.

The transposing mechanisms 76, 78, 80, 82 are mounted to pivot points 84, 86, 88, 90, respectively, and all four transposing mechanisms 76, 78, 80, 82 are **linked together by a beam 92** to a stepper motor 94 that pivots the transposing mechanisms 76, 78, 80, 82 about the pivot points 84, 86, 88, 90, respectively. (col. 13, lines 5-9).

2. Carlson does not disclose or suggest using vacuum cups to pick-up and carry the golf ball in such a manner that the ball remains rotationally fixed as presently claimed by applicants. Rather, Carlson uses mechanical grippers to pick-up the ball and rotate it through an angle of ninety (90) degrees before placing it in a receiving cup. That is, the ball does not remain in a rotationally fixed position as it is being transported by the Carlson system. Instead, the ball is rotated as it is being transported by the mechanical grippers, and then the rotated ball is deposited into the receiving cup.

FIG. 9b depicts a side view of a single transposing mechanism 76 made up of a **mechanical gripper 76** that is pneumatically operated and a pair of gripper pads 96, 96a made from low durometer polyurethane rubber to prevent the spherical object O from moving relative to the gripper 76, when the spherical object O is conveyed **through the fixed arc of 90 degrees.** (col. 13, lines 29-37).

FIG. 9a depicts in further detail the four transposing mechanisms 76, 78, 80, 82 described above that are operative for the purpose of transposing the spherical objects O from one work station to the immediately-adjacent processing work station while concomitantly **causing the spherical objects O to be rotated through an angle of precisely 90 degrees.** (col. 13, lines 3-5).

3. Carlson does not disclose orienting the ball about axes that are alternately perpendicular to each other as claimed by applicants. As shown in Figs. 2 and 2A of the subject application, in one embodiment, the ball in applicants' system may be oriented consecutively about a vertical axis; horizontal axis; and vertical axis. In contrast, as shown in Fig. 1 of Carlson, the object is rotated about axes (Z2, Z3, and Z4) that are parallel to each other.

The spherical object is oriented by rotating it through the three Euler angles, each at a separate "orienting" work station, ST2, ST3, and ST4, respectively, wherein each orienting work station has a **single axis of rotation, Z2, Z3, and Z4, respectively, that are parallel and coplanar with one another.** (col. 4, lines 57-62).

In summary, it is respectfully submitted that applicants' system is completely different than the system disclosed in Carlson, which uses mechanical grippers to pick-up and carry the object. It is respectfully submitted that Carlson does not provide any guidance or suggestion to a person of ordinary skill in the art for a rotary indexer having multiple vacuum cups for picking-up, holding and carrying the ball so the ball remains rotationally fixed, and then transferring the ball to motorized rotating vacuum cups at first, second, and third stations so the ball is rotated about axes that are alternately perpendicular to each other as presently claimed by applicants.

Turning to Osterfeld, it is respectfully submitted the present invention still would not be obvious based on teachings in this reference. Osterfeld discloses a gripper system for transporting a cylindrical workpiece and the system includes a rotary indexer. The system can be used to transport a filter cartridge along a conveyor belt. The system includes a gripper apparatus having pivotally connected jaw members that open and close in response to an actuator. After the filter element has been grasped by the gripper jaws, the gripper assembly moves the filter, via a conveyor belt, to an end-cap mounting station, where two end-caps are simultaneously placed on opposite ends of the filter element. The end-caps move from the conveyor to a rotary indexer, where they are filled with uncured plastisol resin before being connected to the filter element.

However, there is no disclosure or suggestion in Osterfeld for a transfer mechanism that includes taking and analyzing an image of a golf ball at an imaging station, determining the correct orientation analysis, and transferring the ball to different orientation stations using a rotary indexer having multiple vacuum cups for picking-up, holding and carrying the ball. Thus, it is respectfully submitted that even if the teachings in Osterfeld were combined with the teachings in Gordon and Carlson, the presently claimed invention as recited in amended claims 1-2, 4, 10, 17-19, and 21-25 would not be obvious. In view of the foregoing, it is respectfully requested that the rejection of these claims under 35 U.S.C. §103(a) in view of Gordon, Carlson, and Osterfeld be withdrawn.

Next, the Office Action rejects claim 19 under 35 U.S.C. §103(a) as being unpatentable over Gordon in view of Carlson and Carlson and further in view of Gentiluomo, U.S. Patent 3,778,067 ("Gentiluomo"). Claim 19 is ultimately dependent upon amended claim 1. Applicants believe that amended claim 1 is in condition for allowance for the reasons discussed above and claim 19 should be allowed accordingly. The Gentiluomo reference has been addressed in detail in previously filed responses filed by applicants. In view of the foregoing, it is respectfully requested the rejection of claim 19 under 35 U.S.C. §103(a) over Gordon, Carlson, Osterfeld, and Gentiluomo, taken alone or in combination, be withdrawn.

Lastly, the Office Action rejects claim 23 under 35 U.S.C. §103(a) as being unpatentable over Gordon in view of Carlson and Osterfeld and further in view of Welchman et al., U.S. Patent Application Publication 2001/0012389 ("Welchman"). As the Examiner recognizes, claim 23 is dependent upon amended claim 1. Applicants believe that amended claim 1 is in condition for allowance for the reasons discussed above. Thus, dependent claim 23 should be allowable as well. The Gordon, Carlson, and Osterfeld references are discussed in detail above. The Welchman reference has been addressed in detail in previously filed responses filed by applicants. In view of the foregoing, it is respectfully requested the rejection of claim 23 under 35 U.S.C. §103(a) over Gordon, Carlson, Osterfeld, and Welchman, taken alone or in combination, be withdrawn.

Conclusion

In summary, applicants submit that claims claims 1-2, 4, 10, 17-19, and 21-25 (as amended) are patentable and each of the Examiner's objections and rejections has been overcome. Accordingly, applicants respectfully request favorable consideration and allowance of amended claims 1-2, 4, 10, 17-19, and 21-25. Applicants further understand that once the generic claim (Claim 1) is found allowable, all of the species claims that incorporate elements of the generic claim should also be found allowable in accordance with the Response to Restriction Requirement filed July 22, 2009.

The Commissioner is hereby authorized to charge any fee required in connection with the filing of this paper (or credit any overpayment) to Acushnet Company, Deposit Account No.: 502309. Should there be any outstanding matter that needs to be resolved in the present application; the Examiner is invited to contact the undersigned at the telephone number provided below.

Respectfully submitted,

Acushnet Company
Customer Number: 40990

By: *Daniel W. Sullivan*
Daniel W. Sullivan
Reg. No.: 34,937
Tel: (508) 979-3067

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